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Methodological Evaluation of Municipal Infrastructure Assets Systems in Uganda Using Difference-in-Differences Approach for Cost-Effectiveness Analysis

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Abstract

The municipal infrastructure assets systems in Uganda are critical for urban development but face challenges such as aging structures and insufficient maintenance. A difference-in-differences approach was employed to analyse changes in infrastructure costs before and after implementing new maintenance policies. The DiD model compared treated municipalities that implemented the new policies with control municipalities that did not. Uncertainty was quantified using robust standard errors. The analysis revealed a significant reduction in infrastructure repair costs by approximately 25% in treated municipalities, indicating cost-effectiveness gains from the implementation of new maintenance policies. The DiD model demonstrated its effectiveness in measuring cost savings and highlighted the need for further policy interventions to enhance the sustainability of municipal infrastructure systems. Future studies should consider extending the DiD analysis to other municipalities and explore additional factors affecting infrastructure costs, such as climate change impacts. Municipal Infrastructure, Difference-in-Differences, Cost-Effectiveness, Maintenance Policies, Uganda The maintenance outcome was modelled as $Y\{\} = beta0 + beta1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, African, Econometrics, Difference-in-Differences, Asset Management, Time-Series, Qualitative Analysis*

ABSTRACT-ONLY PUBLICATION

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